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either for basing hypotheses on an inadequate understanding of that which is actually known or for presenting conjectures in the form of established facts.

—G. S. Miller.

Shaw, William T. THE COST OF A SQUIRREL AND SQUIRREL CONTROL. State College of Washington, Agr. Exp. Stat., Pop. Bull. no. 118, pp. 1-19, 11 figs. January, 1920.

Estimates of damage done to growing crops by noxious rodents are good so far as they go, but inevitably leave much to be desired. So far as known Professor Shaw is the first American author to present a quantitative study of damage done by a destructive rodent in growing grain. The rodent dealt with is the common Columbian ground squirrel (*Citellus columbianus*) of eastern Washington and neighboring states; the grain was wheat of the variety known as Hybrid 128; the location Pullman, Washington. Wheat was sown on a typical piece of ground in October, 1918. Before winter a part of the land was divided into sections 50 by 50 feet which were fenced to retain the squirrels. Immediately adjoining each squirrel plot was a check plot of similar size, slope, and soil. Photographs of the growing grain and of the amount of wheat and straw actually harvested make graphic the devastation in the squirrel-infested plots. Forty-one pounds of wheat were obtained from 500 square feet of the check plot as compared with four pounds from an equal area of the squirrel-infested plot. Similarly nine sheaves of straw were harvested from the check plot as against one sheaf from the squirrel-infested plot. The average destruction per squirrel in the experiments described was found to be 50½ pounds "which at a price of \$2.10 per bushel for hard winter wheat was worth \$1.76." The number of squirrels per acre varies but where uncontrolled may be as high as 25. If each squirrel does \$1.76 damage annually the burden on the community is seen to be enormous.

Following the description of the experiments a number of interesting facts are given regarding the life history of the species. The handsome illustrations of young in various stages of growth, of the hibernating squirrel, and of the dens admirably supplement the discussion in the text. Different means of squirrel-control, namely poison, gas, trapping and exclusion, are taken up in the final section of the paper.

Two points combine to make this paper of extraordinary value: the thorough life history studies on which it is based, and the quantitative methods used.

—Walter P. Taylor.

B[allou], H. A. RATS IN THE WEST INDIES. Agricultural News, Barbados, vol. 18, pp. 406, 407. December 27, 1919.

"Rats continue to do a considerable amount of damage to sugar canes in the West Indies, in spite of the activities of the mongoose. In Jamaica, it would appear that rats are pests of the first importance. A glance through the indexes of the volumes of the Journal of the Agricultural Society will reveal numerous references to rats in recent years. These relate to short articles on the damage done by rats, to brief notes by the editor, from correspondents on the importance of taking all possible action against rats, etc. There are also notes on rat traps, rat virus, and rat poisons. In one volume—that for 1908, for instance—there appear thirty-one page references to these headings.

In Barbados, a Commission was appointed on September 25, 1911, to take evidence with a view to determining in what districts of the island rats have increased and are damaging the cane crops, and to take such steps as may be necessary to ensure that a proper number of mongooses be sent from those districts to a person to be appointed to examine the contents of the stomachs of 100 mongooses, with a view to ascertaining whether they are of much use in the destruction of rats."

"The report concludes with the following: 'We are of opinion that the benefit to the cane crops derived from the presence of the mongoose is so great, that a stop should at once be put to their destruction, and we therefore recommend that the Mongoose Destruction Act of 1904 be repealed.'

As an appendix to the report, figures were given to show the number of rats and mongoose killed and recorded since the Acts came into force, and up to October, 1911. The number of rats killed and paid for during the period 1908-9 to 1911, was 56,578, while the figures for the mongoose during the same period were only 33,974."

The Report of the Select Committee of the House of Assembly in 1917 came to the conclusion that the operations against the mongoose ought to be continued under the provision of the Mongoose and Rat Destruction Act, 1909, but nothing is said about the destruction of rats.

—G. S. Miller.

ALLEN, GLOVER M. Dogs of the American aborigines. Bull. Mus. Comp. Zool., vol. 63, pp. 431-517, plates 1-12. March, 1920. (History, origin, and descriptions of the breeds of American aboriginal dogs; with remarks on the origin of the domestic dog, its specific status, and the crossing of dogs with wild species of Canidæ.)

AMERICAN BISON SOCIETY. Report for 1919-20, pp. 1-95, 22 illustrations. 1920. (The twelfth census of American bison, taken January 1, 1920, shows 3393 in the United States, 5080 in Canada, and 66 in foreign countries; a total of 8539 pure bred living animals.)

BARTHOLOMEW, JAMES. Number of young in stoat's family. Scottish Nat., p. 181, November-December, 1919. (Records a litter of eleven young stoats.)

CADWALADER, WILLIAMS B. Report of the board of directors. Forth-eighth Ann. Rep. Zool. Soc. Philadelphia, pp. 1-18. 1920. (Mammals exhibited in the Philadelphia gardens for the first time include *Cebus flavescens*, *Lagothrix infumatus* and *Dasyprocta variegata*.)

COOPER, HAROLD J. The hypophysis cerebri of the California ground squirrel, *Citellus beechyi* (Richardson). Amer. Journ. Anat., vol. 26, pp. 185-207, November, 1919.

DAVIDSON, WINIFRED M. See Wroughton, R. C., and Winifred M. Davidson.

DEHAUT, E.-G. Contributions à l'Étude de la Vie Vertébrée Insulaire dans la Région Méditerranéenne Occidentale et particulièrement en Sardaigne et en Corse. Paris, Paul Lechevalier, 1920. pp. 1-95, pls. 1-3, text figs. 1-27. Price 15 fr. (Contains a number of articles wholly or partly on mammals.)

DIXON, JOSEPH. Control of the coyote in California. Univ. of Calif. Exper. Station Bull. no. 320, pp. 379-397. April, 1920. (Discusses the good and bad points of the coyote, recommends control rather than extermination, and gives directions for reducing the numbers of this animal.)

- DONALDSON, HENRY H. Quantitative studies of the growth of the skeleton of the albino rat. *Amer. Journ. Anat.*, vol. 26, pp. 237-314. November, 1919. (Prepared with the assistance of Sara B. Conrow.)
- FOX, HERBERT. Report on the laboratory of comparative pathology for the year ending February 29th, 1920. Forty-eighth Ann. Rep. Zool. Soc. Philadelphia, pp. 19-34. 1920. (Data on autopsies held at the Philadelphia zoological gardens.)
- GRINNELL, GEORGE BIRD. A chapter of history and natural history in old New York. *Nat. Hist.*, vol. 20, pp. 23-27. January-February, 1920. (Includes a few mammal notes.)
- GYLDENSTOLPE, NILS. On a collection of mammals made in eastern and central Borneo by Mr. Carl Lumholtz. *Kungl. Svenska Vet.-Akad. Handl.*, vol. 60, no. 6, pp. 1-62, figs. 4, pls. 6. 1919. (New forms: *Galeopterus lechei*, *Petaurista petaurista lumholtzi*, and *Hylopetes harrisoni caroli*. The collection includes 51 forms. The paper concludes with a list of the mammals known to inhabit the mainland of Borneo and a list of works on Bornean mammals, 1870-1917.)
- HANSON, FRANK BLAIR. The ontogeny and phylogeny of the sternum. *Amer. Journ. Anat.*, vol. 26, pp. 41-115, September 15, 1919. (Considerable of this discussion is devoted to mammalian sterna.)
- HARPER, FRANCIS. Okefinokee Swamp as a reservation. *Nat. Hist.*, vol. 20, pp. 28-41. January-February, 1920. (Contains a few notes on mammals.)
- HILZHEIMER, MAX. Dritter Beitrag zur Kenntnis der Bisonten. *Arch. f. Naturgesch.*, Jahrg. 84, Abt. A, Heft 6, pp. 41-87, figs. 1-25. February, 1920. (Old World species, mostly fossil.)
- HINTON, MARTIN A. C. The field mouse of Foula. *Scottish Nat.*, pp. 177-181. November-December. 1919. (Describes *Apodemus fridariensis thuleo*, subsp. nov., from the island of Foula, Scotland.)
- HINTON, MARTIN A. C. See also Thomas, Oldfield, and Martin A. C. Hinton.
- LANGE, D. Sights and sounds of the Northwoods. *The North Woods. Official Bull. Minnesota Forestry Assoc.*, vol. 7, no. 10, pp. 24-32. December, 1919. (Notes on the moose in Minnesota, pp. 29-32. To be continued.)
- LEWIS, FREDERIC T. The course of the Wolffian tubules in mammalian embryos. *Amer. Journ. Anat.*, vol. 26, pp. 423-435. January 15, 1920.
- LÖNNBERG, EINAR. Remarks on some Congo mammals. *Rev. Zool. Africaine, Bruxelles*, vol. 7, pp. 236-248. 1920. (New subspecies: *Felis serval kivuensis* from Kivu district, and *Potamochoerus porcus albinuchalis* from district of Lake Leopold II.)
- LUTZ, FRANK E. Scientific zoölogical publications of the American Museum. Summary of work on whales. *Nat. Hist.*, vol. 20, pp. 107-109. January-February, 1920. (Reviews of papers on *Kogia* and *Ziphius*.)
- MILLER, G. S., JR. Australian expedition. Exploration and field-work of the Smithsonian Institution in 1919. *Smithsonian Misc. Coll.*, vol. 72, no. 1, pp. 28-32, figs. 30-32. 1920. (Account of the work of Charles M. Hoy in Australia, with an interesting figure of two young duck-bills in their nest.)

- MITCHELL, P. CHALMERS. Official guide to the gardens of the Zoological Society of London. Eighteenth edition, with 52 illustrations from photographs of animals now or recently living in the gardens, taken by F. W. Bond, F. Martin Duncan, F. Z. S., and D. Seth-Smith, F. Z. S. 110 pages. London. 1920.
- MURRAY, HENRY A., JR. The development of the cardiac loop in the rabbit, with especial reference to the bulboventricular groove and origin of the interventricular septum. *Amer. Journ. Anat.*, vol. 26, pp. 29-39. September 15, 1919.
- SETON, ERNEST THOMPSON. The habitat and home life of the kangaroo rats of our western desert. *Journ. Washington Acad. Sci.*, vol. 10, pp. 306-307. May 19, 1920. (Brief abstract of an illustrated lecture given before the Biological Society of Washington.)
- SHUFELDT, R. W. Weasels and their habits. *Amer. Forestry*, vol. 26, pp. 163-169, figs. 1-10. March, 1920. (Popular account of the North American species.)
- STOCK, CHESTER. Origin of the supposed human footprints of Carson City, Nevada. *Science*, n. s., vol. 51, p. 514. May 21, 1920. (Record of *Mylodont* remains in the Pleistocene deposits at Carson City.)
- STONE, WITMER. The use and abuse of the genus. *Science*, n. s., vol. 51, pp. 427-429. April 30, 1920. (A sane discussion of the problems of genera, subgenera, and technical names.)
- SWENK, MYRON HARMON. On a new subspecies of otter from Nebraska. University studies, Lincoln, Nebraska, 1918. Separate, pp. 1-6, pl. 1. May 15, 1920. (*Lutra canadensis interior* subsp. nov., from Lincoln Creek, Seward County.)
- TAYLOR, WALTER P. Notes on mammals collected principally in Washington and California between the years 1853 and 1874 by Dr. James Graham Cooper. *Proc. California Acad. Sci.*, ser. 4, vol. 9, pp. 69-121. July 12, 1919. (An interesting summary of Doctor Cooper's work and notes on 114 of his specimens of mammals still extant in American museums.)
- TAYLOR, WALTER P. Saving the Yellowstone elk herds. *Conservationist*, vol. 3, no. 1, pp. 3-6, 2 figs. January, 1920.
- THOMAS, OLDFIELD. Notes on the genus *Cheliones*. *Journ. Bombay Nat. Hist. Soc.*, vol. 26, pp. 726-727. October 20, 1919. (Describes *Cheliones hurrianæ collinus*, subsp. nov., from Kohat, Northwest Frontier, India.)
- THOMAS, OLDFIELD. Some new mammals from Mesopotamia. *Journ. Bombay Nat. Hist. Soc.*, vol. 26, pp. 745-749. October 20, 1919. (New: *Eptesicus hingsoni*, *E. walli*, *Pipistrellus coxi*, *Paraechinus ludlowi*, and *Gerbillus cheesmani*.)
- THOMAS, OLDFIELD. On Neotropical bats of the genus *Eptesicus*. *Ann. and Mag. Nat. Hist.*, ser. 9, vol. 5, pp. 360-367. April, 1920. (New forms: *E. fuscus pelliceus* from Merida, Venezuela; *E. chiriquinus*, Boquete, Chiriqui; *E. montosus*, Highlands of Bolivia; *E. inca*, Cuzco, Peru; *E. punicus*, Puna Island, Gulf of Guayaquil; *E. argentinus*, Goyna, Argentina; and *E. fidelis*, Esperanza, Argentina.)

- THOMAS, OLDFIELD, AND MARTIN A. C. HINTON. On the group of African zorils represented by *Ictonyx libyca*. Ann. and Mag. Nat. Hist., ser. 9, vol. 5, pp. 367-369. April, 1920. (New: *Pæcilictis*, type *Ictonyx libyca*; *P. oralis* from Suakin, Sudan.)
- WORTMAN, JACOB L. On some hitherto unrecognized reptilian characters in the skull of the Insectivora and other mammals. Proc. U. S. Nat. Mus., vol. 57, pp. 1-52; figs. 1-16. 1920.
- WROUGHTON, R. C. Change of coat in the common palm squirrel—an appeal. Journ. Bombay Nat. Hist. Soc., vol. 26, pp. 727-728. October 20, 1919.
- WROUGHTON, R. C. On the genus *Tadarida* (wrinkle-lip bats). Journ. Bombay Nat. Hist. Soc., vol. 26, pp. 731-733. October 20, 1919.
- WROUGHTON, R. C., AND WINIFRED M. DAVIDSON. Two new forms of the "*Funambulus tristriatus*" group. Journ. Bombay Nat. Hist. Soc., vol. 26, pp. 728-730. October 20, 1919.

CORRESPONDENCE

A WORK ON THE COMPARATIVE OSTEOLOGY OF THE PROCYONIDÆ

Editor Journal of Mammalogy:

If your space will admit of it, I should like to invite the attention of the readers of the Journal of Mammalogy, and all others interested in the morphology of American mammals, to a work I completed several years ago on the "Comparative Osteology of the *Procyonidæ*." This memoir is complete and in all respects ready to go to the printers and engravers for publication. It consists of 122 type-written pages of matter, carrying 87 figures on 13 plates, and 7 text cuts; the figures are of natural size, and the work when printed will be a royal quarto. All of the skeletons of the procyonine mammals of the world are thus illustrated, including the Panda (*Ælurus fulgens*). The photographs are made direct from the specimens by the author, and taken on several views. The taxonomy of this interesting family of mammals is presented, and many of the osteological characters are tabulated. Most of the material was loaned from the Division of Mammals of the United States National Museum; so that when the memoir is published, the skeletons described will be accessible to a great body of students and mammalogists.

Just prior to the present war, a well known publishing house in Washington, D. C., offered to publish this work for \$670, which insured one thousand (1000) copies, heavy paper covers, and finest material in the market in the way of paper and binding. This opportunity was lost. It can now be gotten out by the same house for about \$1100, and it is quite likely that better and more reasonable terms can be made. The Elizabeth Thompson Fund of Harvard University has started a plan to publish it by allotting a bequest of \$200, provided the balance can be raised within a year. The President of the American Association for the Advancement of Science has led me to hope that \$100 more may be obtained from the \$4000 on hand for such purposes.

My plan is to publish this memoir through subscriptions from individuals and institutions, much after the same plan as the writings of Garrod and of Forbes were published by the Zoölogical Society of London. Any one subscrib-